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ABSTRACT

This report presents many of the typical questions with which college deans of instruction will be confronted in planning a competency-based technical education (CBTE) system. Under each of 10 major questions that explore the issues of CBTE, a number of more specific questions are listed. The 10 major questions concern the overall approach, program structure, student outcomes, provision of instruction, adaptation of physical facilities, management system, student evaluation, program reporting and documentation, program evaluation and improvement, and personnel training. An outline of those major and specific questions follows. In section 2 of the report, various alternative answers to each specific question are presented which are intended to be representative of the various options typically available to college deans. Comments are included for each answer. They may cite advantages and disadvantages of the option, cautions, and general considerations in evaluating particular alternatives being considered. In the third part of the report, information and materials are provided for planning a specific CBTE program. Planning forms and instructions for completing them are included. A short term plan of action with activities and timelines for implementing CBTE concludes the document. (YLB)

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FINAL REPORT

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PERFORMANCE - BASED EDUCATION (PBE) CURRICULUM

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ATTACHMENT A

SECTION I

PLANNING COMPETENCY BASED TECHNICAL EDUCATION PROGRAMS FOR TECHNICAL COLLEGES IN ALABAMA

Introduction

This section of the report presents a number of Competency Based Technical Education (CBTE) options that might be useful to college deans of instruction as they conceptualize and design the various operational components for a system of education. It adds the flesh to a skeleton based upon a decision to adopt CBTE.

When an overall plan has been mapped out, deans of instruction will be confronted with more detailed nuts-and-bolts kinds of decisions such as what to call this approach, where competencies will come from, what grading system to use, and a host of other operational decisions. The purpose of this section is to present many of the typical questions college deans of instruction will be confronted with in planning a CBTE system.

Also presented are various alternative answers to these questions. The answers provided are intended to be representative of the various options typically available to college deans. In some cases several alternative answers are provided for a single question and in other cases only two--sometime a simple "yes" or" no". In addition to specific alternative answers, comments are included for each answer. The comments may cite advantages and disadvantages of the option, cautions, and general considerations in evaluating particular alternatives being considered.

These planning questions, alternative answers, and comments are not all-inclusive; it would be presumptuous to anticipate every specific

decision point that may arise in all college situations. However, the questions and answers are typical of what might arise in most colleges. Each college will find, perhaps, that certain questions and answers simply do not apply to their local situation, while others are right on target. The message here is for college deans of instruction to examine critically and in detail exactly what they want their college to do and decide how it must be done. Inadequate planning in the early stages--particularly in the area of day-to-day operational aspects of the CBTE system of learning --can prove to be a significant liability in terms of successful implementation.

Exploring the Issues of CBTE

I. What will the overall approach to competency-based technical education look like?

II. How will programs be structured and offered?

III. How will the desired student outcomes of each program be handled?

IV. How will instruction in each competency be provided? How will credits be awarded?

V. How will physical facilities be adapted to accommodate the competency-based approach?

VI. How will competency-based learning be managed?

VII. How will student mastery be assessed?

VIII. How will individual student progress be reported and documented?

IX. How will programs be evaluated and improved?

X. How will personnel be trained to implement the competency-based approach?

Under each major question (I-X), more specific questions (A, B, C, etc.) are addressed and commented on. Following is an outline of those major and specific questions addressed in Table 4-1, beginning on page 1 of Section II.

I. What will the overall approach to competency-based technical education look like?

A. What will this approach officially be called in your college?

B. How will competency of program completers be defined?

C. Who will be held accountable for student competence?

D. What will be the system's commitment to mastery learning?

E. Will the approach be designed to be compatible with needs of the present educational system?

F. Will there be one statewide approach to CBTE or several approaches?

G. What reasons will be offered publicly for implementing the competency-based approach?

H. Who will be primarily involved in designing the competency-based system of learning?

I. How often and by whom will the overall competency-based system be evaluated and revised?

II. How will programs be structured and offered?

A. Will training in specialized job titles (within programs) be offered routinely?

B. Will upgrading of workers already employed be a part of the new system?

C. What days and times will students have access to training programs?

D. Will student have access to training programs throughout the year?

E. When can new students routinely enroll to fill vacancies?

F. When will students be able to exit routinely as successful program completers?

G. Will advanced placement within programs for experienced students be possible?

III. How will the desired student outcomes for each program be handled?

A. What will the desired student outcomes for each program officially be called?

B. How will student outcomes be stated?

C. Will outcomes be stated in a common manner throughout the state? The college?

D. How will student outcomes for each program be identified?

E. What approach will be used to communicate and manage lists of outcomes for programs?

F. How often will student outcomes for programs be revised?

G. What types of student outcomes will be listed for each program?

H. How will desired student outcomes be sequenced within each program?

I. How will competencies be reconciled within existing program lengths?

J. Will core competencies common to several programs be identified?

K. Will common programs in the college have identical competencies?

IV. How will instruction in each competency be provided?

A. What approach will be taken for the delivery of initial, routine instruction in each competency?

B. Will a common learning package or module format be used throughout the college?

C. Will the learning package format be adopted, adapted, or designed?

D. Who will be involved in developing the format?

E. Who will provide leadership and technical assistance for developing learning packages?

F. What rewards will be offered to encourage development of learning packages?

G. How self-contained will each learning package be?

H. Will students routinely pretest in each learning package?

I. Will a terminal performance (behavioral) objective be developed for each competency?

J. Will each learning package be organized around several enabling or interim objectives?

K. What will be the predominant type(s) of external learning resource(s) referred to in learning packages?

L. Will media hardware be largely standardized throughout the college?

M. Will alternative learning modes be routinely provided in learning packages?

N. What will be the primary means of providing periodic feedback and correctives in learning packages?

O. Will learning packages be developed cooperatively among instructors in the same program?

V. How will physical facilities be adapted to accommodate the competency-based approach?

A. Will a facility layout and use plan be developed for each type of program area in the college?

B. What will be the scope of most changes made in existing facilities?

C. Will new facilities be designed and built with CBTE in mind?

D. How will resource centers be set up for each program?

E. How will resource management be handled to support the competency-based approach?

F. What designated areas will be included as each shop, lab, and classroom is rearranged?

G. Who will be responsible for and involved in adapting the physical facility?

H. What time table will be developed for adapting facilities to CBTE?

VI. How will competency-based learning be managed?

A. Will one overall system for managing learning be used college wide?

B. What components will the CBTE management system have?

C. Will computers be used in management and, if so, how, where, and by whom?

D. Who will have the primary responsibility for controlling pacing from competency to competency?

E. How will learning packages be managed?

F. Will standard or average time for mastery for each learning package be computed?

G. How will instructor-student ratios be adjusted?

H. Will students be allowed to group themselves to work on common competencies?

I. In multi-instructor programs, will each instructor be assigned to a group of students or competencies?

J. Will restrictions be placed on testing and retesting for competencies?

K. Will programs other than the full-time day programs have access to the competency-based materials?

L. How will the unique needs of college programs be accommodated?

VII. How will student mastery be assessed?

A. Will the emphasis be placed on written, performance tests or both types?

B. Who will develop/adapt tests to evaluate mastery of each competency?

C. Who will determine minimum standards of performance for competencies?

D. What types of test items will formal written tests utilize?

E. Will alternative versions of written tests routinely be available?

F. Will performance tests primarily use rating scales or checklists?

G. Will formative testing over major groupings of competencies be used routinely?

H. Will summative testing over all program competencies be used routinely?

I. Will computers be used routinely in testing within programs?

VIII. How will individual student progress be reported and documented?

A. What system will be utilized to report and document progress?

B. Will the system be flexible enough to accommodate unique needs at each college level?

C. Who will certify mastery of each task by each student?

D. How will competencies mastered by each student be reported?

E. Will grades be issued to students?

F. Will partial program completion be recognized?

IX. How will programs be evaluated and improved?

A. What part will program evaluation play in the overall competency-based system?

B. Who will conceptualize, plan, and carry out program evaluation activities?

C. What kinds of data will be used to evaluate programs?

D. How often will programs be evaluated?

X. How will personnel be prepared to implement the competency-based approach?

A. How much of a role will faculty development play in the overall competency-based system?

B. What personnel will be involved in faculty development activities?

C. How will desired professional competencies for instructors and others be identified?

D. Who will design, develop, an deliver faculty development activities and materials?

E. What materials will be used in planned faculty development activities?

F. Will faculty development activities be a one-time event or an ongoing process?

G. At what level will faculty development activities be conducted?

H. What format will be used to deliver training sessions?

I. Will faculty development activities be competency-based or traditional?

J. How will instructors' mastery of professional competencies be assessed?

SECTION II

I. WHAT WILL THE OVERALL APPROACH TO COMPETENCY-BASED TECHNICAL EDUCATION LOOK LIKE?

A. What will this CBTE approach officially be called in your college?

Alternative Answers	Comments
1. Competency-Based Technical Education (CBTE)	o Implies that Job competence is the philosophical requirements behind the system. o Competency-Based" may turn off some individuals who may have preconceived notions about this term, which has appeared in the literature for some time now. o "Technical Education" may have a positive connotation for those who consider themselves to be strongly technically oriented.
2. Performance-Based Technical Education (PBTE)	o Implies that students will be required to actually perform in demonstrating mastery. o May cause confusion with the Performance-Based Teacher Education movement.
3. Personalized Instruction or Personalized System of Instruction (PSI)	o Implies that personal needs of students will be met. o A newer term that may be unfamiliar to some technical educators. o Term is gaining popularity at the community college and university levels.
4. Individualized Instruction (II)	o Focuses on the individual as the major concern. o A narrower term that describes a particular approach to delivering instruction rather than an overall concept. o Has been widely used in many other fields, particularly secondary education.
5. Programmed Instruction (PI)	o A narrower term describing a method of presenting instruction in frames.

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5. Programmed Instruction (PI) Continued	o May have a negative connotation for some people, who fear that teaching machines, etc., are too impersonal.
6. Criterion-Referenced Instruction (CRI)	o Term is gaining in use throughout industry, business and the military. o May have a highly technical or academic connotation for some educators.
7. Systems Approach or Instructional Systems Design (ISD)	o Commonly used in military training settings. o May have a highly technical connotation for some educators.
8. Competency-Based Education (CBE) or Competency-Based Instruction (CBI)	o Broad terms used to describe the competency-based approach, regardless of subject area or grade level. o Common terms used widely throughout the literature.
9. Learning for Mastery (LFM) or Mastery Learning (ML)	o Newer label; gaining in popularity. o Can be used in connection with any subject area. o Describes the real essence of the competency-based approach; mastery.
10. Some other new, unique or localized label	o May have little or no meaning beyond the local setting. o May or may not be adequately descriptive of the specific local setting and the particular learning system being used. o May be confusing to add another acronym or label to the many already in use.

10 Some other new, unique, or localized label (CONTINUED)	o May reduce rejection of the approach; would avoid rejection of more familiar labels based on preconceived ideas or previous negative experiences.

B. How will competency of program completers be defined?

Alternative Answers	Comments
1. Self-sufficiency in society or other broad concept relating to the individual's life roles. (ILR's)	o Somewhat difficult to describe in operational and measurable terms. o May appeal to general educators, the public, and others outside the technical education sphere.
2. Ability to render worthy performance.	o May be easier to define and measure than ILR's above. o Some may feel this definition is too limiting.
3. Proficiency on an end-of-program occupational competency test.	o Difficult to develop, administer, and score valid and reliable measures of occupational competence. o Based on institutional rather than on-the-job performance.
4. Ability to produce product or render service for which someone will be willing to pay.	o More "job related" than some other definitions. o Quite easy to measure and evaluate by using objective data such as rejects, errors, pay scale, production rate, etc. o May be too narrow in scope for some, particularly those having a more "humanistic" philosophy.
5. No official definition.	o Overall goal(s) of the desired system of instruction may be hazy and subject to a wide variety of interpretations.

5. CONTINUED	o Difficult to develop strategies to bring about goals and determine whether they have been reached.

C. Who will be held accountable for trainee competence?

Alternative Answers	Comments
1.Student	o May provide incentives to foster improved attendance, more time on task, higher proficiency, etc. o May involve potential legal problems.
2. Instructor	o May put instructor in a very awkward position of being accountable for something beyond his or her control. o May encourage lack of responsibility on student's part. o Opposition from teacher unions likely.
3. Both instructor and student.	o Perhaps difficult to define the exact degree and areas of shared responsibility. o Probably a more realistic approach in terms of feasibility. o Would promote instructor-student cooperation.
4. Dean of instruction in the technical college.	o May hold the Dean accountable for action (both positive and negative) beyond his or her control. o Might provide strong incentive for the Dean to support the new approach specifically and quality instruction generally.

D. What will be the system's commitment to mastery learning?

Alternative Answers	Comments
1. Commitment to individual student reaching a very high level of mastery (e.g., 95-100% proficiency) before being awarded credit for each learning task or being forced to move on to the next task.	o More of the potential benefits of the competency-based approach might be realized if students typically reach high levels of mastery for each learning task. o High-quality instructional materials and learning activities become more critical. o Variable learning time becomes a necessity, creating potential problems in managing learning, particularly in large classes. o If enforced, many students will not "master" all the required tasks for program completion during traditional time periods (one semester, 1080 hours, etc.).
2. Commitment to student reaching a somewhat lower level of mastery (e.g., 80-90% proficiency) before being awarded credit for each learning task or being forced to move on to the next task.	o More students can become successful program completers. o More students may be able to complete programs during traditional time periods (semester, etc.) than if mastery level is higher. o Students will be mastering early, basic pre-requisite learning tasks at lower levels of proficiency, which may contribute to learning difficulties later in more advanced, complex tasks. o Stated minimum levels of proficiency may become maximum level for some students.
3. Acceptance of more traditional, widely varying levels of mastery acceptable (70-80=C, 80-90=B, etc.).	o Many students will complete training programs with only minimal competency in many tasks. o More compatible with existing grading and reporting systems. o Many of the potential benefits of mastery learning may not be realized.

E. Will the approach be designed to be compatible with needs of the present educational system or consumers?

Alternative Answers	Comments
1. Present educational system (e.g. accounting, management, calendar, grading, etc.).	o Many of the inherent advantages of this approach might be lost. o New approach might be installed more quickly, operate more trouble-free, and encounter less resistance from instructors, administrators, and the "system."
2. Consumers (students, employers, etc.).	o Might look very different from the present system of technical education (open-entry, testing out, higher quality evening programs, 12-month calendar, etc.). o The competency-based system might not "fit" into the overall college educational system in terms of grading, facilities, use of media, calendar, etc. o Potential benefits are substantial including greater public support, more satisfied students and employers, fewer students turned away, etc. o To adequately respond to employer and student needs the competency-based system may have to deviate widely from the present system. Such radical changes might require the support of the community, the president, the advisory council, the chancellor, etc.

F. Will there be one college-wide approach to CBTE or several approaches?

Alternative Answers	Comments
1. One overall, competency-based system of learning for technical education through the entire college.	o Might be more difficult to design one effective overall system that is compatible with unique needs of various service areas. o Will take considerable time to design, develop pilot test, revise, and implement one overall system, particularly in large colleges.

1. One overall, competency-based system of learning for technical education throughout the entire college. CONTINUED	o One system would greatly enhance articulation based on competencies, cooperative curriculum development, reduction of unnecessary duplication of effort, centralized (economical) purchasing and production of media and materials, a single management system, and a high degree of computerization in terms of task lists, learning packages, grading, tracking, certification, etc.
2. Two or more department competency-based systems of learning operating within the college.	o Separate systems operating within various levels within the college, or various service areas might encourage competition for limited resources and wide variation in program quality from program to program and severely limit the transportability of materials, strategies, and personnel. o Various systems might come and go with a particular administrator, coordinator, or instructor promoting that system.
3. One overall system with minor variations in operational elements to meet unique college and program needs.	o Might make the overall system more acceptable to more people if slight variations were allowable where necessary and appropriate due to uniqueness of college, program area, etc. o Allowing slight variations might encourage a free marketplace for innovative strategies and documents; those that work particularly well can be incorporated into the overall system.

G. What reasons will be offered publicly for implementing the competency-based approach?

Alternative Answers	Comments
1. Better meeting of needs of business and industry (employers)	o Better ties with employers might result if this reason is stated publicly. o Pressure will be on to ensure that employers' needs become a primary concern in designing the program.

2. Better meeting the needs of individual students.	o May appeal to public, college board, and potential students. o To do this effectively might require substantial changes in the present system (entry dates, remedial instruction, effective counseling, etc.).
3. Better utilization of training facilities.	o May appeal to taxpayers and the general public. o May necessitate changes such as full day, full evening, and year-round operation.
4. Improving the learning process.	o May be a debatable issue among many, particularly instructors. o Some might consider this a public admission of less than quality instruction in the present system (which may or may not be the case). o Pressure may be created to make significant, measurable improvements in learning outcomes.

H. Who will be primarily involved in designing the competency-based system of learning?

Alternative Answers	Comments
1. Non technical educators within the college system	o Might benefit from fresh insights and observations of outsiders. o Might be able to tap resources outside the technical education subsystem. o May encourage "buy in" of the new approach by those needed for its success. o Design may be too theoretical, academic, general, etc., if dominated by those who do not fully understand and/or have a commitment to quality technical education.

2. Consultants, technical experts, etc., outside the college system	o Results may vary from helpful to disastrous, depending on the quality, preparation, expertise, and selection of the consultants. o Can be an efficient and economical means of gathering and evaluating information on other systems already in operation around the country. o Paid consultants might be better able to perform technical writing, research, and related activities than college faculty because they may have more training, time, and incentive to do so.
3. College level personnel (instructors, administrators, etc.)	o Those whose day to day responsibility it will be to operate the system might design a system that is practical and feasible. o Involvement of college-level personnel in the design of the system may slow things down but might promote their commitment to the new system and might facilitate their acceptance of it. o There may be administrators, supervisors, and instructors who know absolutely nothing about the competency-based approach and who may have difficulty understanding CBTE concepts. o Some instructors may be resistant to change and may become vocal in their opposition to the new approach before listening to all the facts.
4. Employers, advisory committee members, and others from business and industry.	o Needs of business and industry can be addressed very early in the program planning process. o Employers may be unfamiliar with how the educational system operates and with educational terminology and concepts. o May involve logistical problems such as time, meeting facilities, communications, etc.

6. Balanced involvement by various groups, including employers, college faculty, instructors, consultants, etc.	o Balanced input can be gathered from all segments who will be affected by the system. o Several levels of working committees or groups might be needed to coordinate this input. This may include one overall steering committee, an advisory committee, specific committees to address particular issues such as curriculum, grading systems, etc., ad hoc committees, program area committees, task forces, etc.

I. How often and by whom will the overall competency-based system be evaluated and revised?

Alternative Answers	Comments
1. Infrequent evaluation (only as needed).	o Policies, procedures, strategies, documents, and individuals may become entrenched and more difficult to change. o Less costly than frequent evaluation in terms of direct costs as well as in morale, disruption, etc.
2. Evaluation on a regular basis.	o Components not contributing adequately to the system's goals can be spotted and altered before becoming entrenched. o More costly than infrequent evaluation.
3. Evaluation by those within the system.	o Might be conducted at less cost than external evaluation. o Can be conducted at regular intervals or as needed with minimum of advance notice. o Those within the system may have limited expertise in the area of evaluation strategies. o Internal evaluation may increase chances of conflicts of interest, personality conflicts, unsubstantiated conclusions, and other problems.

4. Evaluation by those outside the system.	o External evaluation may become quite expensive--particularly if comprehensive in scope and depth. o Substantial lead time may be needed to begin the process. o Outsiders may be more objective and more likely to evaluate system components rather than people. o Comprehensive external evaluation may result in valid conclusions and recommendations that may be embarrassing, unpopular, unsettling, or against the philosophies of particular individuals or groups.
5. Evaluation by persons within and outside the system on a regular and "as needed basis."	o The best of all evaluation systems may be obtained; such as objectivity, validity, less cost, fewer chances of conflicts, increased comprehensiveness.

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II. HOW WILL PROGRAMS BE STRUCTURED AND OFFERED?

A. Will training in specialized job titles within programs be offered routinely?

Alternative Answers	Comments
1. Yes	o A wider range of student interests and abilities would be served than if only a single training option is offered in each program. o The needs of students who have limited time to devote to training might be accommodated if short (e.g., several weeks or months), specialized options were available within programs. o High risk students might be encouraged to successfully complete a lower level of training (e.g., electronics assembler), then, if they choose not to continue on to a higher level (e.g., test technician), they would still be employable. o More in tune with real needs of business and industry. o Already employed workers might be able to pursue higher level skills in more advanced specializations within the program.
2. No	o Each training program would be somewhat easier to develop and manage if all students in a program area were pursuing the same occupational goal. o Might not respond adequately to the needs of individuals and of business and industry.

B. Will upgrading of workers already employed be a part of the new system?

Alternative Answers	Comments
1. Yes	o Programs can better serve the needs of business and industry by offering updating skills training and retraining in new equipment, processes, instruments, tools, etc.

1. CONTINUED	o A much larger pool of potential students would be available than if training were limited to those seeking initial employment only. o Would increase opportunities for meaningful interaction between industry and education in areas of emerging technology, personnel exchanges, shared use of expensive new equipment, identifying emerging occupations, and so on. o May create funding and other legal difficulties at college, state, and federal levels.
2. No	o Avoids conflicts with any applicable regulations or policies limiting training to "preparation only." o Reduces chances of conflicts with more advanced training programs in other institutions (community colleges, universities, etc.). o Potential administrative problems such as hiring adjuncts, recruiting for specialized sessions, coordination with the regular program, etc., would be eliminated.

C. What days and times will students have access to training programs?

Alternative Answers	Comments
1. Traditional times, such as 8 a.m. to 3 p.m. Monday through Friday.	o May fit in better with the normal district and institution schedules. o Most personnel are accustomed to working this type of schedule. o Resources required for custodial and security services, heating, air conditioning, and lighting are held at more traditional levels (even less if a 3- or 4-day week is utilized).
2. Extended times, such as 7 a.m. to 10 p.m. Monday through Friday and/or weekend hours.	o May appeal to students who must work full or part time while in training. o Allows greater use of training facilities.

2. CONTINUED

- o Can accommodate several shifts of students and instructors in a single facility.
- o May necessitate hiring lab assistants, aides, proctors, student assistants during peak hours.
- o Might increase energy, custodial, and security costs.
- o May be feasible only at college sites that serve a predominantly adult clientele.

D. Will students have access to training programs throughout the year?

Alternative Answers	Comments
1. No--only August through June.	o More compatible with traditional educational training periods. o Facilities can be shut down several months each year, saving energy costs. o Instructors have time off for industry updating, vacation, etc. o May discourage taking in new students, particularly during April, May and June, and thus, hiring new faculty members. o Many students may not be able to successfully complete the training program by June, encouraging reduced standards of performance and skipping over important content areas toward the end of the school year. o Students who do no successfully complete all learning tasks by June either "fail" and get no certificate, must repeat all or major parts of the program, or worse, may receive a certificate/diploma anyway since they attended the entire year. o Promotes somewhat artificial program lengths of one semester, one year, three semesters, etc.

2. Yes--Year-round operation (with 2-3 week shutdown for vacations and maintenance)	o Encourages practice of accepting new students to fill vacancies throughout the year. o Encourages mastery learning approach since the program will not end on any particular day for all students. o Varying program lengths can be set based on average time required to complete minimum learning tasks verified by industry as being needed for employment (e.g., 14 weeks, 7 1/2 months, 21 months, etc.). o More effective utilization of training facilities; cost per student training goes down since more student learning time is available in a 12-month school year than a 9-or 10-month year. o Many instructors prefer 12-month employment. o May be difficult or undesirable to incorporate at the middle and secondary school levels due to tradition, community habits, K-12 student progression system, etc.

E. When can new students routinely enroll to fill vacancies?

Alternative Answers	Comments
1. At the beginning of the school year (August) or new semester (August and January)	o Compatible with the traditional calendar and that of neighboring institutions. o Public is accustomed to enrolling in programs at these times. o Less of a management problem for faculty when students enter only once or twice a year. o Students who wish to enroll at random times and are denied access to programs may not return to enroll for the next semester, quarter, or year. o This practice may cost the college substantial dollars if funds are dependent on student attendance or full-time equivalency (FTE) because programs may generate student support funds at 100 percent capacity in August, 75 percent capacity in November, and 50 percent

1. CONTINUED	or less by April. o When all students begin at the same time, faculty often go to great lengths to keep the group together in terms of learning tasks. This encourages lecture-demonstration and other group-oriented learning experiences and heavy expenditures for many duplicate pieces of equipment, instruments, and tools (often one per student) and might discourage the shift toward a flexible-time, mastery learning approach.
2. When vacancies occur (on a controlled basis).	o New students can take advantage of training opportunities throughout the year. o Works well with the mastery learning approach. o May necessitate year-long operation. o If well-developed, self-paced learning materials are not available instructors will have great difficulty working with students who are entering at various times throughout the year. o Greatly reduces the need for duplicate tools, equipment, etc., since students would tend to be spread out among learning tasks. o Makes more efficient use of certain support personnel (registrar, book store, guidance, etc.) since it eliminates the pattern of a huge influx of new students at one time and virtually no new students at other times. o On any given day, there may be several new students and several experienced students enrolled in most programs, creating a more constant pool of potential tutors, group leaders, tool room helpers, etc.

F. When will students be able to exit routinely as successful program completers?

Alternative Answers	Comments
1. At the end of the school year or semester or quarter.	o Compatible with ending dates of traditional programs.

1. CONTINUED	o Fits well with a 9- or 10-month school year.
2. When all required learning tasks have been successfully completed.	o Promotes a mastery learning, high proficiency approach. o Helps insure that successful completers reach competence in required areas and do not just put in "seat" time. o Tends to spread out completion times throughout the year, particularly if students enter at various times. o May require creative approaches to be compatible with minimum attendance policies, state boards (offered once or twice a year), Veterans Administration policies, etc. o Difficult to incorporate into lower level programs or courses where completers progress to next level with fixed starting dates. o Allows placement of graduates in jobs as soon as they complete the program instead of having to place all graduates in December or June, or some other exit date.

G. Will advanced placement within programs for experienced students be possible?

Alternative Answers	Comments
1. Yes	o Students can get full credit for previous learning and be required to master only those tasks not yet mastered. o Accommodates the wide range of previous experiences (work, military, college, travel, reading, etc.) typical of adult students. o Requires fairly sophisticated system of objective testing to document mastery of previously learned tasks. o Difficult to coordinate the time, funds, other resources required if all students begin training at the same time.

2. No	o Eliminates the necessity of diagnositc testing. o May discourage effective articulation with other training institutions. o May be an unpopular policy with students who have a great deal of prior knowledge or experience. o Difficult to justify such a policy, particularly to students and industry.

III. HOW WILL THE DESIRED STUDENT OUTCOMES FOR EACH PROGRAM BE HANDLED?

A. What will the desired student outcomes of each program officially be called?

Alternative Answers	Comments
1. Competencies.	o May not be understood by representatives in business and industry and even by students. o Implies job competence--the ability to perform. o Is becoming widely used in education and training programs.
2. Tasks	o Implies that trainees will be doing something. o Those in business and industry and students may relate well to this term. o Already in use by the V-TECS Consortium, the Task Inventory Exchange, and other institutions and organizations.
3. Jobs	o Associated with more traditional approaches to vocational education and occupational analysis than to outcomes. o May be confused with job titles or occupational titles.
4. Units	o Often used to describe parts of textbooks and workbooks. o May be confused with the more conventional unit/block approach to occupational analysis.
5. Objectives	o Might be confused with behavioral objectives, which are based on student outcome.
6. Goals	o Usually associated with broader, more generalized descriptions of overall desired behaviors rather than more specific desired outcomes.

1. Continued	o If each learning package refers to brief, carefully selected reading assignments, some of the difficulties students have with reading assignments can be reduced.
2. Still visuals (slides, filmstrips, etc.)	o More and more of these materials are becoming available. o Especially well-suited when color, closeups, and sequential steps need to be shown. o Can be developed locally. o Can be expensive in terms of initial cost, equipment required, storage, parts replacement, breakdowns, power outages, etc.
3. Motion visuals (videotapes, film loops.)	o Well suited to teaching intricate, sequential steps; can speed up or slow down time. o Motion may be essential in only a very small percentage (typically 5-10 percent) of the competencies in any particular program area an not at all in others. o Equipment, maintenance, storage, and software can be expensive. o May not be economically feasible if students are working on different tasks on any particular day. o May be difficult to develop software locally.
4. Combination still/motion visuals (interactive video, and video disc.)	o Retain most disadvantages of motion visuals, with more economical use of software since motion is used only as needed. o Specialized hardware needed to produce software locally. o Prepared software is not always available.
5. Instructor	o Economical in terms of start up and ongoing costs.

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5. Continued	o Not a viable alternative if instruction is to be self-paced and individualized.
6. Other human resources (proctors, perrs, volunteers, etc.)	o Economical to utilize. o Important personal interaction can be maintained. o Quality of instruction may vary widely, depending on individuals used and training they receive. o May create problems with scheduling and insurance.

L. Will media hardware be largely standardized throughout the district?

Alternative Answers	Comments
1. Yes	o Can promote volume purchasing and centralized storage and maintenance. o Projectors can be shifted easily from low-use to high-use areas. o Programs can share equipment. o State or college production of software may become somewhat specialized and perhaps more efficient. o Teacher training, student orientation, and other personnel/hardware interfaces may be standardized. o Commercially available software may require various media formats (filmstrips, videotapes, etc.), thus preventing standardization of hardware.
2. No	o Each college can select the best software for their needs without regard to what the rest of the colleges are using. o Many different types of media hardware being

2. (Continued)	used within the colleges. This may cause maintenance, part replacement, and repair problems. o Chances increase that some equipment will actually receive little or no use.

M. Will alternative learning modes be routinely provided in learning packages?

Alternative Answers	Comments
1. Yes (reading or viewing)	o May enhance the learning process for some students. o May significantly increase the use of external resources required for learning packages. o Will provide appropriate options for presenting instruction to students having different learning styles.
2. No	o If each learning activity listed in the learning package has been carefully selected and is appropriate for the students and the learning task, there may be little need for routine alternative learning options included in every learning package. o Learning packages would be easier to develop and to follow if only one learning option is included.

N. What will be the primary means of providing periodic feedback and correctives in learning packages?

Alternative Answers	Comments
1. Instructor checkpoints	o Would involve a scheduled instructor time on a daily basis. o Can be built into each learning package for student-instructor contact.

2. Student self-checks	o Valuable instructor time can be saved. o Carefully developed, objective self-evaluation instruments will allow students to determine whether their practice was correct and if not, why. o Students can learn to take more responsibility for their own learning.
3. Students checking other students	o Student interaction can be built into the training program. o Less demand on instructor's time. o Requires objective checklists and similar instruments.
4. Various combinations of instructor checkpoints, student self-checks, and students checking each other	o Various approaches can be used to insure immediate, appropriate feedback on various types of practice performance. o Would require instructor checkpoints for dangerous, critical and complex situations. o Activities will be more varied than if one approach was used predominantly.

O. Will learning packages be developed cooperatively by instructors in the same program area?

Alternative Answers	Comments
1. Yes	o Can speed up the developmental process substantially; 100 home economics teachers could develop 100 learning packages far more easily and quickly than, say, 25, 10, or 1 teacher could. o Each instructor would not be overwhelmed by the awesome task of developing learning packages alone or with the help of just one or two instructors. o Finished product will benefit from the varied

1. (Continued)	experience, expertise, and imagination of many instructors. o Would require a common format and effective teacher training activities and materials in how to develop learning packages.
2. No	o Getting instructors together initially and periodically for training and writing becomes less critical. o Duplication of effort if instructors in similar programs within the district develop learning packages independently of one another. o Would result in less standardization of format, style, and quality.

V. HOW WILL PHYSICAL FACILITIES BE ADAPTED TO ACCOMMODATE THE COMPETENCY-BASED APPROACH?

A. Will a facility layout and use plan be developed at the state level for each type of program area?

Alternative Answers	Comments
1. Yes	o Would force decision makers to think through the active facility layout and use of space before making actual changes. o Would serve as a vehicle for conceptualizing the effective and efficient arrangement of equipment, spaces, storage, etc., to accommodate mastry learning. o College staff may or may not have the expertise to develop such a plan. o Would provide some much needed guidelines for deans of instruction and faculty and might accommodate the unique needs of different kinds of programs. o Might require considerable time and resources to develop.
2. No	o Local deans and faculty who wish to move ahead may do so without having to wait for a state plan. o Approaches to facility layout and use should take on an individual flavor. o May lead to some facilities being either inappropriately rearranged or not rearranged at all. o More difficult to determine what needs to be done, what it will cost, how progress is being made, and whether desired outcome has been accomplished.

B. What will be the scope of most changes made in existing facilities?

Alternative Answers	Comments
1. Major (changing walls and doors)	o Would correct facility design and layout characteristics that do not support a competency-based system of learning. o Renovations needed due to wear and tear, weather, abuse, and obsolescence might be made at the same time. o Major changes in the classroom, shop, and laboratory might provide a psychological boost to the faculty member and convince him or her that the "system" supports the change to CBTE. o May prove prohibitively expensive. o Careful analysis of "what should be" versus "what is" may reveal only minor discrepancies that would not require costly changes in design or layout of the facility.
2. Minor (rearranging furniture and equipment, adding partitions, etc.)	o In many programs, only minor changes are needed. o Can be made with fewer disruptions to the learning process and at less cost. o If poorly conceived or carried out, may be corrected more easily than major ones. o Can be updated more easily to respond to growth and changes in technology.

C. Will new facilities be designed and built with CBTE in mind?

Alternative Answers	Comments
1. Yes	o Can be designed from floor to ceiling to accommodate competency-based learning effectively. o CBTE might be implemented more quickly in specially designed facilities which could become valuable model CBTE sites. o Many technical colleges have already completed the process of adding and expanding facilities. o Architects and planners who understand the competency-based approach may be difficult to find. o Many outdated and incompatible facilities standards and policies may be encountered at the state department, and college levels (e.g., facility standards requiring a classroom for each program containing 20 chairs facing a blackboard).
2. No	o More conventional, readily available designs might be built. o Traditional designs might encourage more conventional instructional programs, perhaps damaging the college effort to implement CBTE. o Additional funds and effort might be required later to modify recently build facilities.

D. How will resource centers be set up for each program?

Alternative Answers	Comments
1. Convert all of the existing classroom into a resource center.	o Would provide a great deal of space for study and media carrels, worktables, storage areas for media and learning packages. o Would be close to the shop or laboratory so both areas could be adequately supervised throughout the day. o Would probably involve little cost--perhaps for additional electrical outlets, several movable partitions, carrels, etc. o Might create difficulties during the transition phase and for Adult Basic Education, apprenticeship, academic, and other users of the facility during evenings and weekends. o Might encourage faculty members to package instruction and include theory in each package as needed.
2. Convert a portion of the existing classroom into a resource center.	o Some conventional classroom space would remain. o Might aid in the gradual transition to CBTE. o Some faculty members may continue to teach transitionally, using the remaining classroom area. o Would facilitate multiuse of the room. o Might result in distractions between the classroom and the resource center areas.

3. Several programs share the use of a nearby resource center.	o Resource center would probably get a lot of use. o Easier to justify purchasing media equipment if it will be shared by several programs. o Aides or student assistants might be needed to provide adequate supervision. o Different programs using different media formats might make sharing of equipment and space difficult.
4. Centralized resource center serving many programs, a building, or an entire college.	o Would probably get more use than several resource centers spread around the college. o It might be easier to justify the hiring of one or more aides, clerks, or librarians to supervise a resource center used by many programs. o Existing media center, library, and resource area might be converted. o Faculty members would not be immediately available to answer questions, provide clarification, and give immediate feedback to students. o If students must walk a considerable distance, problems might arise, including reluctance to use the center, class cutting, and traffic in halls throughout the day. o If students read print materials and/or view mediated materials showing the step-by-step procedure for performing a task, they may forget steps by the time they return to the shop or lab for practice.

E. How will resource management be handled to support the competency-based approach?

Alternative Answers	Comments
1. Purchase initial, replacement, and new equipment, tools, instruments, etc., based solely on the validated competencies identified for each program.	o Would promote the procurement of all the essential, but only the essential equipment, and tools actually needed for students to attain the program competencies. o Would reduce amount of unnecessary equipment, which is often purchased because "it would be nice to have."
2. Make ongoing purchases of consumable supplies based solely on each program's identified competencies.	o Would provide a sounder basis for ordering supplies. o Budgets might be more realistic if based on the average material cost per competency multiplied by the projected number of students.

F. What designated areas will be included as each shop, lab, and classroom is rearranged?

Alternative Answers	Comments
1. Media stations	o Could be existing, purchased, or constructed tables, desks, or carrels to accommodate media equipment for student viewing and listening.
2. Study stations	o Can be most any area that is quiet and well-lighted so students can read, study, write, answer questions, and check answers.

3. Practice-stations	o Should be well-equipped areas within the shop, lab, or classroom where students can perform hands-on practice activities. o Typically these are set up for major competency-based areas; students move from practice station to practice station as they progress through the program. o Require that all specialized tools, instruments, and manuals needed for one kind of task are located at or near the practice station set up for that kind of task, usually in a locked cabinet or workbench.
4. Combination media/ practice station or work station.	o Allow students to look at audiovisual or print materials showing exactly how to perform a task and then actually perform the task at the same station. o This approach "marries" the instruction to the practice; one or more steps can be viewed from slides or a manual and the student can then immediately perform those steps. o Certain "clean" tasks can be presented and practiced at work stations right in the classrooms; other "messy" tasks can be presented and practiced in the lab or shop area.
5. Testing stations	o Designated areas might be set aside for students to take formal written evaluations for each competency or unit. o If practical, designated areas might be reserved for the hands-on testing or evaluation of each task.

G. Who will be responsible for and involved in adapting the physical facility?

Alternative Answers	Comments
1. State-level staff (architect, maintenance, etc.)	o May or may not be able to identify and incorporate the specific changes required in each unique program area. o Might take some of the burden off the instructor. o Might result in a more centralized, comprehensive, cost efficient approach.
2. College-level administrators (president, dean of instruction)	o Would be aware of and respond to the unique college situation. o May or may not have the interest in or ability to formulate detailed plans for rearranging facilities. o Might see to it that job was done right since it would involve his/her school.
3. Faculty members and dean of instruction	o Probably better able to determine the specific adaptations needed for his/her program. o If not knowledgeable of CBTE concepts and principles, inappropriate changes may be sought or appropriate changes resisted. o If those most affected by changes are involved in the planning process, necessary changes might be more readily accepted.

H. What kind of timetable will be developed for adapting facilities to CBTE.

Alternative Answers	Comments
1. Short term (less than 2 years)	o Adaptation process would not drag on. o Minimizes long-term disruption and turmoil. o Increases possibility of hastily conceived and implemented changes.
2. Long term (2-5 years)	o More time can be devoted to careful planning of changes. o Cost of changes can be spread out over a longer time period. o Various approaches can be tried out on a small scale and revised as needed. o Process will take considerably longer than shorter term timetable.

VI. HOW WILL COMPETENCY-BASED LEARNING BE MANAGED?

A. Will one overall system for managing learning be used statewide?

Alternative Answers	Comments
1. Yes	o Would reduce confusion, enhance articulation and could tap college-level resources (e.g., computer center) more easilyl. o Will take time, effort, and dollar input to develop. o Would have to be general enough to apply collegewide and specific enough to manage learning effectively at the program level.

2. No	o Management systems developed at the college, department, or program levels will vary widely in quality. o Separate systems probably will be incompatible in many ways.

B. What components will the CBTE management system have?

Alternative Answers	Comments
1. Management of competencies	o Managing competencies for each program/course area would be an important component. o Might address the following: What competencies are required for each program and/or specialized option within each program? How many are there? Are they numbered in some way? Are some competencies common to other programs? Are they grouped in some way? When was each list of competencies last revised? Where is the "original" kept or stored? Who can modify the list? What documents will the competencies be printed on?
2. Planning the activities of each student for each successive period.	o Some means is needed for the faculty member and student to sit down each planning period (weekly, monthly, quarterly, etc.) to plan and record which competencies and other activities the student plans to accomplish, and in what sequence. o Critical component for programs that are open-entry and self-paced.

2. CONTINUED	o Might address: What length of time is being planned for? Who is the student? What competencies does the student plan to master? Have prerequisites been met? What other activities might be planned (field trips, tool room duty, etc.)? Have instructor and student agreed to plan? In what sequence (if any) should competencies be completed? Does the number of planned competencies actually mastered affect the student's grade? If so, how?
3. Monitoring or tracking daily activity or progress	o Helps spot students who may be having problems and yields other valuable data. o Might address: What specific time period (one week, two weeks, etc.) is being monitored on each particular document? What specific competency is each student actually working on each day? Which competencies were mastered? When? How many hours were actually spent on each competency?
4. Recording mastery of competencies	o Records which competencies attained by which students. o Might address: Exactly which competencies has each student mastered? When was each mastered? What score or grade (if any) was earned in each? Which competencies have not yet been mastered? Who verified mastery? When?
5. Certifying competencies of graduates and program leavers	o Formally lists areas in which student has attained competence.

5. CONTINUED	o Might address: Which specific competencies were mastered? When? Who certified mastery? Which required competencies (if any) were not mastered? Has the student attained the competencies required for the overall program or just one or more specializations offered within the program? When did the student enter/exit? Did the student take more or less than the standard time to complete the competencies mastered? What rating did the student receive in important attitudes or employability skills? What attendance record did the student have?

C. Will computers be used in management and, if so, how?

Alternative Answers	Comments
1. Not at all	o Would eliminate the planning and cost of hardware and software. o Instructors would be required to devote time and energy to maintaining a manual system.
2. Yes--one centralized computer system housed in the college	o Cost efficient in terms of hardware, software, and personnel for small college. o Would require the physical collection and transporting of all management documents generated throughout the college (progress records, time cards, competency records, etc.) on a regular basis (daily, weekly, monthly) for inputting. o Data might be several days or weeks old.

3. Yes--terminals and printers located at each department in the college tied into a central computer	o May involve considerable expense. o May require hiring additional data entry personnel and/or training faculty in input/output skills. o Might eliminate the need to collect and transport manual documents to central office. o Would give faculty members and students access to up-to-date data. o Might promote experimentation and creativity on the part of deans, supervisors, faculty, and even students if they have direct access to terminals.
4. Yes--micro/mini computers and printer(s) located at each college, building, department, etc.	o Might eliminate the need to drastically update the main computer and related facilities and personnel. o Might eliminate the need for telephone lines, modems, etc., to tie into central computer. o Might help justify the cost of purchasing mini/micro computers for instructional purposes if they will also be used for CBTE management. o Might require training of faculty members and other school personnel. o Might need to generate software from scratch to manage CBTE.

D. Who will have primary responsibility for controlling pacing from competency to competency?

Alternative Answers	Comments
1. Faculty members	o May reduce instances in which students either attempt to rush through the program or fall behind and become frustrated. o May encourage programs to stay lock-step and group-paced. o Might require considerable faculty time.
2. Student	o Students might learn to take more responsibility for their own learning. o Frees faculty members from this time-consuming activity. o Will work effectively in technical college programs. o Guidelines may be needed to give students certain parameters in which they can pace themselves.

E. How will learning packages be managed?

Alternative Answers	Comments
1. Learning packages purchased by each student	o Burden of storing and keeping up with learning packages is placed on the student. o Students may be more apt to keep up with learning packages and bring them to school each day. o Students can make notes in learning packages. o Not feasible until all learning packages are completed. o May not be appropriate if learning packages rely heavily on external learning resources. o May not be legal or desirable in technical colleges.
2. Learning packages stored in the cabinets, etc., and consumed by students as needed	o Students do not have to worry about keeping up with learning packages and bringing them to class each day. o Can involve considerable expense and storage space. o Faculty member must monitor learning packages on hand regularly and avoid running out. o College may not have the funds or capability to reproduce thousands of learning packages.
3. Learning packages stored in file cabinets, etc., with students using (but not consuming) and returning them	o Fewer copies of each learning package would be needed. o Keeps cost to the college and student low.

3. CONTINUED

- Would require some form of check-in/check-out system.
- Students writing on or removing pages might become a problem.

F. Will standard or average time for mastery of each learning package be computed?

Alternative Answers	Comments
1. Yes	o If students know the average length of time previous students have spent working on each learning package, they can pace themselves better and easily determine if they are ahead or behind average progress. o Adding up the average times for all competencies required in a program yeilds a realistic average time for completing the program. This can be valuable in arguing to shorten or lengthen a program when shifting to CBTE. o Some faculty members may use standard time for minimum, maximum, or absolute time students can spend on each competency. o Standard times can prove valuable in developing a grading system or establishing minimum standards of progress.
2. No	o Faculty member is freed from the task of having to compute, record, and update standard time for each competency. o Without standard times for competencies, it is extremely difficult to predict and communicate the expected completion time for each program in other than traditional time frames (10 months, 1,080 hrs.)

G. How will instructor-student ratios be adjusted?

Alternative Answers	Comments
1. Faculty member-student ratios reduced (fewer students during CBTE	o While implementing CBTE, the faculty member will be occupied with developing learning packages, or rearranging the learning environment. o May provide incentive for some instructors to shift to CBTE. o Reducing ratio during transition phase only should not substantially affect FTE levels.
2. Ratios reduced permanently	o May provide powerful incentive to implement CBTE. o Faculty may meet the needs of individual students better if fewer are enrolled at any one time. o A high quality, open-entry, open-exit, competency-based program with fewer students may be just as cost effective as a traditiional program with more students.
3. Ratios left as they were in the traditional approach	o Some faculty members may resist implementing CBTE while continuing to deal with the same number of students as before. o The "system" is not affected in terms of recruitment, enrollment, FTE, etc.
4. Ratios reduced during CBTE implementation and raised (more students) when CBTE is successfully implemented	o May reduce the incentive for some faculty members to implement CBTE. o Successful CBTE programs may handle more students effctively on a daily basis than conventional programs.

H. Will students be allowed to group themselves to work on common competencies?

Alternative Answers	Comments
1. Yes	o Provides important student-to-student interaction. o Students can reinforce each other, check each other's progress, participate in role-playing activities, etc. o If flexible grouping is encouraged, each student may potentially work closely with almost every other student in the program. o Some faculty members may encourage large groups and then provide traditional group instruction. o Faculty members may need to be reminded that each individual student--not the group--should be evaluated on mastery of each competency.
2. No	o Faculty members would not have to worry about maintaining groups. o Much student-to-student interaction might be lost.

I. In multi-faculty programs, will each faculty member be assigned a group of students or competencies?

Alternative Answers	Comments
1. Students	o A closer bond may develop between faculty member and student if the student has been officially assigned. o Instructors might be more apt to monitor their assigned students' progress more closely. o Students will not benefit from the expertise and experience of other faculty members assigned to other students.
2. Competencies	o All students would eventually interact with all faculty members. o Can maximize the strengths of each faculty member and minimize their weaknesses. o Encourages facilty member to become specialists in certain competencies, so they may be assigned the task of developing learning packages, media, tests, etc., for the competencies.

J. Will restrictions be placed on testing and retesting for competencies?

Alternative Answers	Comments
1. Yes	o Setting aside certain days or times for testing prevents demands placed on faculty members to administer and score tests "on demand." For example, restrict written tests to Mondays, Wednesdays, and Fridays only or from 1-3 p.m. daily, or require that a student wait at least 24 hours after the initial test was not passed before retesting. o Somewhat violates the concept of self-paced, mastery learning. o Some faculty members may carry such restrictions too far and end up with a lock-step program.
2. No	o If no restrictions apply, students can test and retest when ready, with a minimum of waiting. o Faculty members must have ready, on a daily basis, all equipment, tools, and supplies, required for any test. o Places the burden on faculty members to administer and score tests on demand.

K. Will programs other than the full-time day programs have access to the competency-based materials?

Alternative Answers	Comments
1. Yes	o Evening, extension, part-time, exploratory, apprenticeship, summer, and other programs could reap the benefits of materials developed for the full-time day program. o Better articulation might result among programs if the same competencies and materials are being used. o Coordination is needed to ensure the materials are not abused.
2. No	o Avoids problems of lost or misplaced equipment and materials, and other conflicts between regular full and part-time faculty.

VII. HOW WILL STUDENT MASTERY BE ASSESSED?

A. Will the emphasis be placed on written or performance tests?

Alternative Answers	Comments
1. Written tests	o Easier to develop and administer than performance tests. o Can be administered efficiently in large groups. o Programs may become heavily theory-oriented. o many "successful" graduates may leave programs without ever having actually demonstrated their mastery of essential job skills.
2. Performance tests	o May place more of a burden on the instructor to develop, schedule, and administer. o If students know they will be required to actually demonstrate mastery of each task through performance, they may be more apt to spend sufficient time on task to reach mastery. o Programs would become more performance-oriented than theory-oriented. o Provides an important dimension of quality control when each individual student must perform to receive credit for mastering each competency.

B. Who will develop tests to evaluate mastery of each competency?

Alternative Answers	Comments
1. Faculty members	o Occupationally competent faculty members are perhaps, most qualified to determine what skills and knowledge are actually essential on the job and what level of proficiency is needed for job entry. o Some may lack skills needed to develop objective, valid tests. o A great deal of time may be required to develop good tests for each competency.
2. Others (curriculum specialists, consultants, etc.)	o Would free the faculty member from time-consuming test development. o Those outside a particular occupational area may have difficulty developing valid tests. o Funds may not be available to support development of tests by others.
3. A combination of the above	o Probably the most cost-effective approach to use.

C. Who will determine minimum standards of performance for competencies?

Alternative Answers	Comments
1. Faculty members	o Should be able to determine minimum standards of performance based on knowledge of industry standards. o Some may confuse trainee standards with experienced worker standards.
2. Representatives from business and industry	o Have an up-to-date perspective on standards. o Some may have trouble conceptualizing minimum performance standards, particularly from a training perspective. o Might be difficult to get input from a sufficient number of appropriate industry representatives.

D. What types of test items will formal written tests utilize?

Alternative Answers	Comments
1. Recall items (short answer, fill in the blank, essay, etc.)	o Such items can be developed relatively quickly. o Answers to such items are often open to interpretation, sometimes leading to arguments over "right" answers. o Can often be scored only by the faculty member. o Such items typically assess basic facts and low-level learning. o Often time-consuming to score.

2. Recognition items (multiple-choice, true-false, matching, etc.)	o If properly constructed, there is only one right answer to each question. o Can be scored almost instantly by machine, clerk, aide, or faculty member. o If properly constructed, multiple-choice items can assess basic facts or higher level knowledge.

E. Will alternate versions of written tests routinely be available?

Alternative Answers	Comments
1. Yes	o Problems arising from tests falling into student hands might be reduced. o Results of retesting are more valid if an alternate form of test is used. o Test banks can be used to produce tests.
2. No	o Less of a burden on the faculty member to develop and manage tests. o Test development would not appear so overwhelming.

F. Will performance tests primarily use rating scales or checklists?

Alternative Answers	Comments
1. Rating scales	o Perhaps not quite as difficult to develop, since the evaluator evaluates a brief listing of characteristics (texture, finish, etc), using a scale with one extreme for a positive rating and the other extreme to a negative rating. o A 5 or 10-point scale, for example, opens the evaluation process up to a great deal of subjectivity. o May be complicated to compute the student's score on a given rating scale.
2. Checklists	o More objective, since the evaluator usually responds with a yes, no, satisfactory, or unsatisfactory for each criterion. o More difficult to develop since each item on the test must be detailed enough to spell out precisely on what basis the item should be judged (e.g. "are holes located as per print+ 005"--not "location of holes"). o Scoring of each test is easy.

G. Will formative testing over major groupings of competencies be used routinely?

Alternative Answers	Comments
1. Yes	o Provides a vehicle to help the student pull things together, relate similar competencies to each other, and review and apply what was learned in each major segment of the program. o Written and/or performance tests over major segments of each program would allow students to test out of major segments. o Students who do poorly on a test covering major portions of the program can be provided with remediation before going on. o May enhance retention and transfer of learning.
2. No	o Would eliminate the burden of having to develop tests over major program segments in addition to the tests used to evaluate each specific competency.

H. Will summative testing over all program competencies be used routinely?

Alternative Answers	Comments
1. Yes	o Well-developed, end-of-program written and performance tests would yield valuable data about what each student actually learned throughout the training program. o If summative tests cover most competencies, specific weaknesses in the training program can be identified. o May serve as a valuable, culminating experience for students.

2. No

- o Would eliminate burden of developing such a test.
- o Valid, reliable, objective end-of-program tests may not be readily available and beyond the ability of instructors to develop.

I. Will computers be used routinely in testing within programs?

Alternative Answers	Comments
1. Yes	o Could speed up the scoring of tests. o Test item banks could be maintained, eliminating the need to manually develop alternate versions of tests. o Some tests can be administered by computer. o Instructors can have at their fingertips a great deal of information such as means, ranges, item analyses, etc.
2. No	o Would eliminate the need for additional computing capacity, software, and training. o Would keep the testing phase of the CBTE system less threatening.

VIII. HOW WILL INDIVIDUAL STUDENT PROGRESS BE REPORTED AND DOCUMENTED?

A. What system will be utilized to report and document progress?

Alternative Answers	Comments
1. Present system used largely as is.	o Might make the transition from traditional to CBTE easier. o Might reduce the need for replacing documents, policies, procedures, strategies, etc. o Instructors and the public are already familiar with the present system. o Components of the present system (grades, certificates, etc.) may not be compatible with the competency-based approach. o Might encourage the continued use of conventional approaches to grading, etc.
2. Present system adapted to fit CBTE.	o Appropriate components of the present system can be maintained with inappropriate components changed as needed. o May be less of a shock to the system than starting from scratch. o Might severly limit the kinds of improvements made.
3. New system developed.	o Would be limited less by tradition. o Might promote the use of new approaches and outlooks. o May be required if present system can't support CBTE concepts. o District may not have expertise in-house to develop a totally new system.

B. Will the system be flexible enough to accommodate unique needs at each school level?

Alternative Answers	Comments
1. Yes.	o If flexible, the unique needs of all colleges can be accommodated.
	o Allowing some flexibility but requiring all colleges to follow the same approach would provide consistancy and standardization but would also avoid a "one size fits all" approach.
	o Differences in the basic approach allowed at each college should be justifiable and carefully thought out.
	o Approaches taken at the various colleges should be supportive of each other and encourage coordination among colleges.
2. No.	o Will ensure the continuation of an overall system.
	o No flexibility might result in one standardized approach that does not fully serve the needs of each college.

C. Who will certify mastery of each task by each student?

Alternative Answers	Comments
1. Faculty members	o Would be readily available to assess and certify mastery of each task.
	o Traditionally has been the faculty member's responsibility.
	o Possibility exists that some faculty members would be less than rigorous in assessing and certifying task mastery when it has been their responsibility to aid students in mastering tasks.
2. Others outside the program (advisory committee members, industry volunteers, etc.).	o Individuals not involved in instruction might be more objective in terms of assessment and certification of competence.

TABLE 4.8

2. CONTINUED	o May be difficult to locate, train, and schedule outsiders on a regular, ongoing basis. o Objective assessment instruments would become more critical.

D. How will competencies mastered by each student be reported?

Alternative Answers	Comments
1. Printed directly on the back of the student's certificate or diploma.	o Eliminates need for separate documentation to report competencies mastered. o Would require a system to verify that competency list is accurate and up-to-date. o Would require some means to prevent students from falsifying the document.
2. Printed on a separate document.	o Would create additional paperwork. o Could be easily lost or destroyed. o Might provide additional space to record additional data such as employability skill ratings, mastery hours versus standard hours for each task, etc.

E. Will grades be issued to students?

Alternative Answers	Comments
1. Yes	o Would make the competency-based system more compatible with the overall college system. o If handled appropriately, would still provide a means of reporting the periodic progress of each student. o Might serve as an incentive for some but not for others. o Might encourage student performance beyond a minimum level.

2. No.	o Would eliminate one of the more complex components of the competency-based system. o Grades may be legally or otherwise required. o Would require development of some other means to report periodic progress to students, parents, and sponsoring agencies.

F. Will partial program completion be recognized?

Alternative Answers	Comments
1. Yes	o Recognizing students who complete a major portion, but not all, of a training program is consistent with the philosophy and goals of the competency-based approach. o Would prevent many students who exit early from being inappropriately labeled as dropouts or noncompleters. o Might encourage potential leavers to remain enrolled long enough to complete a major segment of the training program that might lead to basic employment. o Some means would be needed to officially define and recognize partial completion and distinguish it from overall program completion.
2. No	o Might keep things simpler--each student either completes the overall program or does not. o Would not serve the individual training needs of some students who may need to complete or can benefit from a major portion, but not all, of the program for basic employment.

TABLE 4.8

IX. HOW WILL PROGRAMS BE EVALUATED AND IMPROVED?

A. WHAT PART WILL PROGRAM EVALUATION PLAY IN THE OVERALL, COMPETENCY-BASED SYSTEM?

Alternative Answers	Comments
1. Major role	o Evaluation process must be carefully conceptualized, planned, and carried out. o May involve additional time, funds, and other resources. o Personnel on board may lack sufficient expertise.
2. Minor role	o Potential benefits of a more comprehensive approach to program evaluation may not be realized. o May make the evaluation process less complex, less costly, and less of a barrier to eventual implementation.

B. Who will conceptualize, plan, and carry out program evaluation activities?

Alternative Answers	Comments
1. Deans of Instruction, Faculty Members and State Department of P/S Education Representatives.	o Some may lack the skills needed. o Evaluating one's own program may not be desirable. o Would be yet another responsibility placed on already busy people.
2. Outside consultants	o Might be more objective than those within the state and college. o Would require funding support. o Might lighten the process on the part of collge and state department personnel.
3. Evaluation teams from within the district.	o Results may vary widely.

TABLE 4.9

3. CONTINUED	o Inservice training would be needed. o Would require strategies, instruments, data analysis, and other technical expertise. o By carefully selecting teams, individuals can be matched with programs to be evaluated.

C. What kinds of data will be used to evaluate programs?

Alternative Answers	Comments
1. Employment data from graduates (initial placement, salary, etc.)	o Would focus on how well each program is fulfilling its primary goal--employment of students. o Might allow objective comparison of the success of the competency-based approach with the traditional approach. o Present follow-up system could be used.
2. Feedback from employers	o Would provide valuable information on how well employers are satisfied with graduates. o Would promote communication between employers and colleges. o Might require additional personnel and documents.

D. How often will programs be evaluated?

Alternative Answers	Comments
1. Frequently (every 1-2 years)	o Would provide a means of periodically revising and updating programs. o Might reduce the tendency for programs to become locked into competencies, materials and supplies. o Might involve considerable cost and effort.

TABLE 4.9

2. Infrequently (every 5-10 years)	o Would be less costly and time consuming than more frequent evaluation. o May not be frequent enough to respond to changes in technology an needed program changes.

TABLE 4.9

X. HOW WILL PERSONNEL BE PREPARED TO IMPLEMENT A COMPETENCY-BASED APPROACH?

A. How much of a role will faculty development play in the overall competency-based system?

Alternative Answers	Comments
1. Minor role	o Faculty development activities could probably be conducted with existing expertise, faculty, resources, etc. o Little time and fewer resources would need to be devoted to planning and conducting faculty development activities. o Would create less of a demand on faculty. o May not adequately equip faculty members and others with the skills essential to successfully implement this approach.
2. Major role	o Might better prepare personnel to implement this new approach effectively. o Would probably require a major shift in resource allocations within the college or state. o Outside expertise might be needed to design, develop, conduct, and follow up quality faculty development activities and materials.

B. What personnel will be involved in faculty development activites?

Alternative Answers	Comments
1. Full-time faculty members	o Since the sift from traditional to competency-based essentially occurs at the program/course level, it is appropriate that the regular full-time faculty be involved in and, perhaps, even the primary focus of, these activities. o May involve hundreds of faculty members. o For faculty members who teach full time, faculty development time may have to be donated or purchased (evenings, Saturdays, vacation days, etc.)

TABLE 4.10

2. Part-time faculty members	o Might add substantially to the number of faculty involved. o Might have limited time or commitment. o If trained in the use of competency-based materials, they might be able to more effectively utilize the media and materials developed for the regular full-time programs.
3. Direct support personnel (e.g., media and curriculum specialists)	o If adequately trained might be able to provide leadership and technical support for the competency-based approach. o Since the overall teaching-learning process must be approached differently, personnel involved in testing, media, curriculum, etc., might benefit from training.
4. Indirect support personnel (e.g., typists, clerks, counselors)	o Personnel who may not be directly involved in the instructional process might contribute more to the smooth transition if appropriately trained. o Such personnel may only need a limited degree of training, perhaps at an awareness level only. o Would involve additional resources and time.
5. Administrators, supervisors, coordinators, etc.	o Assuming that those in leadership positions do not need intensive training may not be a valid assumption. o Very carefully designed, high-quality training sessions for leaders will help them be better equipped and more committed to work closely with their faculty.

TABLE 4.10

C. How will desired professional competencies for instructors and others be identified?

Alternative Answers	Comments
1. By college faculty	o Might be identified quickly. o This group may or may not be able to identify those competencies actually needed.
2. By outside consultants	o Might be more objective and less influenced by related faculty development activities within the college. o Might be better equipped to take advantage of similar research and development activities throughout the nation. o Might be more costly than in-house.
3. Based on competencies identified for similar programs	o There have been few programs that have done this. o If appropriate lists of previously identified professional competencies can be located, valuable time and resources might be saved.

D. Who will design, develop, and deliver faculty development activities and materials?

Alternative Answers	Comments
1. College-level personnel	o Personnel and a faculty development vehicle may already be in place in the college. o May be too involved with implementing the new approach to be able to devote adequate time to faculty development.
2. State-level personnel	o Curriculum coordinators would not have daily contact with faculty and support personnel. o Might have very little time and energy to devote to intensive, on-going faculty development activities.

2. Continued	o Materials and activites would probably be standardized if developed at the state level.
3. University-level teacher educators	o Would require available educators who are knowledgeable about CBTE and who would have their commitment and expertise to engage in field-based activities. o Since teacher education at the university level is essentially an FTE-driven activity, teacher educators would have to be supported by tuition payment or other means.
4. Outside consultants	o Would be able to devote their full energy and time to such activities. o Would have been involved in other similar projects. o May be the most cost efficient method.

E. What materials will be used in planned faculty development activities?

Alternative Answers	Comments
1. Purchased materials	o Eliminates the need to develop materials. o Might save a great deal of time and trouble. o Materials that address the specific system being implemented.
2. Adapted materials	o Materials would have to be adapted so they relate to the local situation. o Would be easier than developing materials. o Appropriate materials are probably available.
3. Made-to-order, newly developed materials	o Would involve a considerable investment of time and money.

TABLE 4.10

3 Continued	o Sufficient time to develop materials would have to be built into the system. o Final product could focus specifically on the professional competencies identified and can be written specifically for the system being implemented locally.

F. Will faculty development activities be one-time or ongoing?

Alternative Answers	Comments
1. One-time	o Might be less complicated to schedule and deliver and less costly. o Sufficient time to do the job might not be available in a single block. o Might be overwhelming to some participants, particularly if sessions are lengthy or if too much material is covered.
2. Ongoing	o This approach, extending over several months or years, would be complex in terms of scheduling and conducting. o Would allow faculty members and others to receive intensive training in competencies as they are needed. o Between sessions, participants would be able to apply what was learned.

G. At what level will faculty development activities be conducted?

Alternative Answers	Comments
1. College level	o Would be efficient, large numbers of participants could be served at one time. o Having too many participants from diverse programs may reduce effectiveness.

2. Program level	o Would allow for addressing the unique needs of each program area (e.g., all health occupations instructors together). o Examples of task listings, learning packages, etc., from a single program area could be used.
3. Combination	o Faculty development activities might be delivered at several levels to benefit from the advantages and to avoid the disadvantages of each individual level. o Could accomplish goals such as "selling" the overall competency-based system at one session, developing tentative program task listings at a later session where participants are grouped by program, and addressing the management system on a college basis.

H. What format will be used to deliver training sessions?

Alternative Answers	Comments
1. Intensive initial session for current personnel	o A well-planned and successfully delivered initial session (e.g., two weeks or three days) might help significantly in getting started on a common footing and positive note. o Funds might be needed to pay participants to attend if not a part of their contract. o Such sessions might be attended by the Chancellor, advisory council members, industry representatives, and others, to communicate the college's commitment to the CBTE approach. o A general session could be followed by other specific sessions.
2. Preservice session for newly employed personnel	o After initial training session(s), newly employed instructors and support personnel might benefit from participating in an intensive training session designed to introduce the new system and their role in it before they being their regular duties.

TABLE 4.10

2. Continued	o Self-instructional, mediated materials might be needed for this purpose.
3. Ongoing sessions	o After initial training sessions for current and newly hired personnel, ongoing sessions might be used to cover additional professional competencies. o Such sessions might be held in the evenings, between the day and evening programs, on Saturdays, during preplanning and end-of-school days, during the summer, as a part of university courses, on a self-instructional basis and during regular hours.

I. Will faculty development activities be competency-based or more traditional?

Alternative Answers	Comments
1. Competency-based	o Using precise competencies and mastery learning, would provide an opportunity for participants to actually participate in a competency-based program. o Participants will be able to see firsthand the benefits of precise competencies, flexible time, quality packaged materials. o Faculty members might be more apt to support the competency-based approach if they have a successful experience as a participant in one. o Carefully developed materials would be needed.
2. More traditional	o Would be less complicated in terms of planning and delivery. o If sessions will not be repeated many times, it might not pay to invest in additional resources to make the faculty development activities fully competency-based.

TABLE 4.10

J. How will faculty member's mastery of professional competencies be assessed?

Alternative Answers	Comments
1. No assessment	o Assumption is that by simply participating in the activity the professional competencies would be attained. o Would eliminate the need for strategies and documents to assess competency mastery. o Some may participate in activities but not master desired professional competencies.
2. Paper and pencil assessment	o Correct written responses to questions, situations and case studies, might be used to infer that competencies have been attained. o Might encourage participants to focus more on knowing how to perform each competency than on actually being able to perform. o Assessment instruments would be needed.
3. In-school assessment of performance	o Actually observing the instructor's performance of each competency in an instructional setting would promote the attainment of competencies by faculty members. o Substantial resources would be needed to provide and train personnel to perform in-school assessment. o Objective rating instruments would be needed.
4. Objective assessment of products developed	o Would focus on assessment of the actual result of the faculty member's efforts. o Many products could be assessed, such as competency statements, media, learning packages, tests, and facility layout.

TABLE 4.10

SECTION III

Planning a CBTE program in _____Technical College

The body of the form contains a purpose statement and six columns for recording detailed information. These columns are reserved for information that will provide answers to several of the basic planning questions mentioned earlier.

Purpose statement. A purpose statement for each item helps clarify the real intent of each functional component or subcomponent. The purpose statement has been formulated by the State Department of Post Secondary Education.

What must be done. This column contains a statement which describes the nature of things to be accomplished. The wording in the first column is in strategy-like language in that "What must be done" is the only thing specified---not "how to do it."

How it will be done. This and the remaining columns have been left blank. Since there are several ways to implement what is to be done, planners at the college level should consider alternative ways in which the required result can be achieved before choosing the one with the greatest chance for success. The method chosen should be entered in this column.

Who will do it. The CBTE dean of instruction must analyze the nature of the task and assign it to someone who is qualified to do it. This person's name should be recorded in this column.

How long it will take. Accurate time estimates are necessary if deadlines are to be met, thus permitting the coordination of all efforts in an efficient manner.

When it must be done. It's important to set deadlines for achieving milestones. Knowledge of the sequence in which tasks must be completed is critical here. Poor coordination of deadlines may lead to inefficiency and costly delays.

Outline for a Program of Work

1. Administer CBTE and Supervise Faculty
   - A. Educational philosphy overall of the technical college programs
   - B. Administration of the technical college
   - C. Clerical and secretarial staff for the technical college
   - D. Maintenance of the physical plant

II. Implement Instructional Program
   - A. Curriculum philosophy
   - B. Instruction
   - C. Assessment
   - D. Remedial instruction
   - E. Learning resource center (LRC)
   - F. Recruitment of faculty

III. Validate Competencies
   - A. Validation of occupational competencies

IV. Implement Staff and Faculty Development Program
   - A. Staff and Faculty orientation
   - B. Preservice training
   - C. In-service training

V. Implement Guidance Program

A. Student Support Services

B. Preassessment diagnosis

C. Program assessment diagnosis

VI. Implement Extracurricular Program

A. Youth organizations

VII. Implement Public Relations Program

A. Public relations

VIII. Recruit and Admit Students

A. Admissions

B. Placement in an occupational program

IX. Certify Student Competence

A. Document student competence

X. Place Students

A. Placement in jobs

B. Placement in advanced training

XI. Evaluate and Renew CBTE Programs

A. Student placement and follow-up

B. Program implementation

C. Revisions as required

Structuring the Plan of Work

The following series of forms (Figure 3-7) has been developed to aid in identifying and tracking decisions and required activites. At the top

of each form, you will find the name of the functional component and an alphanumeric identification code that relates the function to the total structure of the outline given above.

Level of quality required. Faculty members are more likely to produce satisfactory work if they know what level of quality is expected. Quality standards should be communicated right from the beginning. Any efforts which fail to produce high quality results should be repeated. If not, staff members may conclude that quality is not that important.

Using the Planning Forms

Five columns on the forms have been left blank intentionally so the information entered is appropriate for the local situation. The strategy suggested in the left-hand column under "What must be done" must still be translated into concrete actions that are seen as appropriate for the community planning the CBTE program. Once decisions have been made, appropriate information can be entered on the forms and then used to: (a) make specific assignments, (b) monitor progress, (c) determine whether results are produced on time, and (d) determine whether results are up to the level of quality required.

The final planning task is to prepare a timeline to help coordinate all of the tasks and arrange them in the proper sequence. Appropriate timing is important for completion of prerequisite tasks so that their results are available for subsequent tasks. Timelines are usually displayed by using a Gantt chart, such as the sample below, that lists activities down the page, and weeks or months across the top. An important feature of the Gantt chart is that the beginning and ending

dates of activities can be compared to see how well they interface. The amount of concurrent activity is also readily apparent. This helps to anticipate peak periods of activity so they can be managed.

Activity	Sept.	Oct.	Dec.	Jan.	Feb.	Mar.	Apr.	etc.
I. A. Hire Faculty	———							
II. B. Design in-service		———	———					
III. C. Implement in-service					———	———	——	

Summary

Translating need statements and strategies into operational plans is actually a problem-solving process wherein several specific methods are considered for implementation. The basic approach is one of identifying alternative methods that have the potential for achieving the intended goal. It is problem solving in the sense that we want to consider a range of possible solutions in order to be able to select the most effective and efficient one. If we knew which methods were most effective and efficient from the start, then little problem solving would be required. Operational planning, therefore, can be thought of as problem solving of a highly detailed nature.

FIGURE 3-7

I. Administer College Level Supervisors and Faculty

A. Educational Philosophy of the Technical College Programs

Purpose: To synthesize the philosophies of the college programs and CBTE and make them explicit in writing.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
I.	A.1. Collect systemwide statements of philosophy.					
	A.2. Develop statements on the philosophy of this CBTE college.					
	A.3. Develop a common language and produce a glossary of terms.					
	A.4. Develop a support philosophy and the meaning of a support system.					
	A.5. Develop policy statements for the CBTE college that are consistent with total college system policies and the philosophy of CBTE.					
	A.6. Design and produce a faculty handbook that contains statements of philosophy, policies, and a glossary of terms.					
	A.7. Design and produce a student handbook that contains statements of philosophy, policies, and a glossary of terms.					
	A.8. Disseminate handbooks as appropriate.					

I. Administer CBTE and Supervise Faculty

B. Administration of the Technical College Programs

Purpose: To provide an effective and efficient system for administering the CBTE programs and supervising the faculty.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
I.	B.1. Determine roles and functions for administrative personnel.					
	B.2. Determine hierarchical structure for administrative faculty.					
	B.3. Hire required administrative personnel.					
	B.4. Orient personnel to CBTE philosophy and operations.					
	B.5. Design communication channels.					
	B.6. Design problem-solving strategies.					
	B.7. Determine where and how open-entry, open-exit instruction will have an impact on time-based regulations required for accreditation.					
	B.8. Develop student record keeping system that meets regulatory agency guidelines.					
	B.9. Develop procedures for supervising personnel.					
	B.10. Develop schedule for supervisory visitations and follow-up conferences.					
	B.11. Develop a system of personnel files.					

I. Administer CBTE and Supervise Faculty

C. Clerical and Secretarial Staff for the Technical College

Purpose: To support the CBTE faculty and its programs by performing secretarial and clerical functions.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
I.	C.1. Determine number of secretarial and clerical staff required. C.2. Determine secretarial and clerical staff functions. C.3. Hire secretarial and clerical staff. C.4. Orient staff to CBTE philosophy and procedures. C.5. Assign staff to assist faculty to select/produce individualized learning materials. C.6. Determine criteria for prioritizing production requests.					

I. Administer CBTE and Supervise Faculty

D. Maintenance of the Physical Plant

Purpose: To operate the CBTE physical plant effectively and efficiently.						
What must be done		How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
I.	D.1. Determine functions and roles for maintenance staff. D.2. Determine maintenance schedules. D.3. Hire maintenance staff. D.4. Train maintenance staff. D.5. Supervise maintenance staff.					

II. Implement Instructional Program

A. Curriculum Philosophy

Purpose: To reach agreement on ideas regarding the CBTE programs and make them explicit in writing.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
II.	A.1. Develop a philosophy statement regarding CBTE. A.2. Develop program-related philosophy statements. A.3. Reach agreement on common terminology for communicating about CBTE. A.4. Develop a support philosophy and define the support services system. A.5. Design and produce a faculty handbook which communicates the philosophy and definitions of CBTE related terms.					

II. Implement Instructional Program

B. Instruction

Purpose: To establish an effective and efficient system for delivering and managing CBTE instruction.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
II.	B.1. Design the sequence of student learning activity, including objectives, learning experiences, organizational structure and evaluation processes.					
	B.2. Design procedures for providing learning activities through use of live, simulated, and multi-media materials.					
	B.3. Select, design, or develop individualized learning materials.					
	B.4. Design procedures for providing practice in the learning process.					
	B.5. Select, design, or develop performance testing procedures, test items and test instruments.					
	B.6. Design procedures for providing feedback to learners over testing devices.					
	B.7. Establish procedures for a diagnostic-prescriptive approach to instruction.					
	B.8. Determine optimal group sizes for group learning activities.					
	B.9. Identify teacher skills required for selecting learner prescriptions.					
	B.10. Design ways to integrate learning with live work in the laboratory.					
	B.11. Design instructional management system.					
	B.12. Design inventory system.					
	B.13. Select content and design procedures for orienting students to CBTE.					

II. Implement Instructional Program

C. Assessment

Purpose: To collect, analyze, and disseminate information about student progress toward mastery of competencies.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
II.	C.1. Design strategies for: C.1.a. Assessing mastery of knowledge. C.1.b. Assessing mastery of occupational skills. C.1.c. Assessing work habits. C.1.d. Assessing attitudes toward work. C.2. Design feedback strategies for: C.2.a. Providing information to students. C.2.b. Providing information to teachers. C.2.c. Providing information to special services staff.					

II. Implement Instructional Program

D. Remedial Instruction

Purpose: To provide effective and efficient remedial instruction for students who do not maintain normal progress.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
II.	D.1. Define normal progress. D.2. Identify reasons why students do not make normal progress. D.3. Determine strategies for dealing with: D.3.a. Unmotivated students D.3.b. Slow learners. D.4. Identify components for the remedial support system. D.5. Design procedures for remedial instruction within each area.					

occupational

II. Implement Instructional Program

E. Learning Resource Center (LRC)

Purpose: To provide an effective and efficient system for circulating and managing individualized CBTE learning materials.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
II.	E.1. Determine media requirements for individualized learning materials.					
	E.2. Determine amount and kinds of audio-visual equipment required.					
	E.3. Order equipment.					
	E.4. Identify points when students interact with various learning materials.					
	E.5. Order learning carrels, tables, chairs, etc. for LRC.					
	E.6. Determine storage requirements for learning materials and equipment.					
	E.7. Order storage files, cabinets, etc.					
	E.8. Order learning materials.					
	E.9. Design system for cataloging, storing, scheduling, and using materials.					
	E.10. Design orientation to introduce instructors to learning resources and procedures.					
	E.11. Design orientation to introduce students to learning resources and procedures.					
	E.12. Determine LRC faculty responsibilities.					
	E.13. Hire LRC faculty.					
	E.14. Train faculty to operate LRC.					

II. Implement Instructional Program

F. Recruitment of Faculty

Purpose: To recruit and hire tradespeople or certified technical faculty interested in teaching in an individualized CBTE instructional program.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
II.	F.1. Advertise vacancies. F.2. Follow affirmative action guidelines. F.3. Review applications. F.4. Interview applicants. F.5. Make final selections. F.6. Obtain financial support for teachers to attend preservice workshop.					

III. Validate Competencies

A. Validation of Occupational Competencies

Purpose: To certify that program competency requirements match job performance requirements.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
III.	A.1. Identify qualified employers and tradespeople for each occupational area. A.2. Obtain their commitments to serve on an advisory committee. A.3. Present orientation for committee members on the philosophy and methods of CBTE. A.4. Present list of competencies, knowledge, and attitudes required to be successful in the occupational area. A.5. Obtain feedback from committee. A.6. Revise list of competencies as required. A.7. Obtain final approval for use of competencies.					

IV. Implement Staff and Faculty Development Program

A. Staff and Faculty Orientation

Purpose: To introduce staff and faculty to the CBTE philosophy and approaches.						
What must be done		How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
IV.	A.1. Determine objectives of the orientation. A.2. Determine content of the orientation. A.3. Determine how content will be presented. A.4. Assign responsibility for content preparation and presentation. A.5. Prepare agenda. A.6. Reserve meeting space. A.7. Schedule faculty and staff for inservice training					

IV. Implement Staff and Faculty Development Program

B. Preservice Training

Purpose: To help staff and faculty members acquire the skills required to establish, operate, and maintain a CBTE program.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
IV.	B.1. Define basic terms and how to use them.					
	B.2. Establish performance standards.					
	B.3. Establish testing-out procedures.					
	B.4. Establish grading practices.					
	B.5. Design instructional strategies, student flow, and management plan in each occupational area.					
	B.6. Design the human relations skill components for all staff and faculty members.					
	B.7. Design training for operation of audio-visual equipment.					
	B.8. Design training for selection, adaptation, or production of individualized learning materials (*VIMAS system).					
	B.9. Develop plans and obtain approval for staff and faculty to earn college credit for participation in pre-service training programs.					

*VIMAS. Vocational Information Materials Assessment System.

IV. Implement Staff and Faculty Development Program

C. Inservice Training

Purpose: To enhance faculty and staff member skills in technical and professional areas throughout the college year.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
IV.	C.1. Design procedures and program of studies for new faculty and staff to become certified.					
	C.2. Develop plan and obtain approval for participants to receive college credit.					
	C.3. Design a faculty and staff development plan for the CBTE programs in the college.					
	C.4. Determine degree of relationship between in-service training and operational activities.					
	C.5. Revise as required to remove discrepancies between teaching-learning activities and planned activities.					
	C.6. Design an evaluation plan to determine effectiveness of in-service activities.					
	C.7. Assign responsibility for conducting the evaluation plan.					
	C.8. Develop a schedule for conducting in-service sessions.					
	C.9. Develop a schedule for collecting evaluation data.					

V. Implement Guidance Program

A. Student Support Services

Purpose: To provide assistance to students experiencing difficulties in achieving their technical education objectives.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
V.	A.1. Develop a philosophy of student support services that is compatible with CBTE.					
	A.2. Identify kinds of problems students are likely to encounter regarding: A.2.a. Financial concerns. A.2.b. Transportation problems. A.2.c. Uncertain employment objectives. A.2.d. Delayed educational development. A.2.e. Difficulties with the law.					
	A.3. Determine which problems Student Support Services will accept responsibility for.					
	A.4. Identify kinds of skills required to assist students with these problems.					
	A.5. Determine personnel qualifications required for work in Student Support Services.					
	A.6. Allocate required faculty and staff.					
	A.7. Orient faculty and staff to CBTE philosophy and methods.					
	A.8. Train faculty and staff to perform skills needed to provide supportive assistance.					

V. Implement Guidance Program

B. Preassessment Diagnosis

Purpose: To assess students (immediately upon acceptance into the CBTE college program) in order to diagnose potential problem areas.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
V.	B.1. Determine purpose of preassessment diagnosis.					
	B.2. Determine which tests and interest inventories to administer, when necessary.					
	B.3. Identify kinds of problems that pre-assessment faculty should look for.					
	B.4. Design referral form and referral procedures.					
	B.5. Determine to whom specific kinds of referrals are to be made.					
	B.6. Assign responsibility for doing preassessment diagnosis.					
	B.7. Train assigned persons to do pre-assessment diagnosis.					
	B.8. Develop procedures for monitoring preassessment diagnosis and follow-up.					

V. Implement Guidance Program

C. Program Assessment Diagnosis

Purpose: To determine the degree of compatibility between a student's characteristics and characteristics required to be successful in an occupational area.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
V.	C.1. Orient faculty to the purpose of preassessment diagnosis.					
	C.2. Assign faculty to identify characteristics required for success in their respective occupational areas. C.2.a. Identify physical characteristics. C.2.b. Identify ability characteristics. C.2.c. Identify personality characteristics. C.2.d. Identify job task characteristics. C.2.e. Identify work environment characteristics. C.2.f. Identify career advancement characteristics.					
	C.3. Design standardized form for conducting and recording interviews.					
	C.4. Train faculty in one-to-one interviewing skills.					
	C.5. Develop referral procedures.					
	C.6. Inform faculty and Student Support Services staff of referral procedures.					
	C.7. Establish a way to monitor the effectiveness of the referral process.					

VI. Implement Extracurricular Program

A. Student Organizations

Purpose: To assist students in the acquisition of leadership and social skills necessary to be successful in a career through participation in a student organization.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
VI.	A.1. Determine which student organizations to sponsor.					
	A.2. Assign appropriate faculty sponsors.					
	A.3. Plan a program of work.					
	A.4. Establish schedule for meetings.					
	A.5. Reserve space for meetings.					
	A.6. Conduct program of work activities.					
	A.7. Evaluate student achievements.					
	A.8. Plan changes in program of work if necessary.					

VII. Implement Public Relations Program

A. Community Relations

Purpose: To inform the community and potential employers about the CBTE college programs and how that serves the students, business, and industries.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
VII.	A.1. Design strategies for disseminating information about the CBTE programs.					
	A.2. Determine roles and functions for those responsible for public relations.					
	A.3. Assign responsibility for public relations to staff and faculty members.					
	A.4. Determine audience(s) to receive public relations information.					
	A.5. Select information to be distributed.					
	A.6. Produce informational scripts.					
	A.7. Design format and layout for script materials.					
	A.8. Obtain approvals for development of information.					
	A.9. Revise strategic strategies as required.					
	A.10. Produce strategies.					
	A.11. Distribute information.					

VIII. Recruit and Admit Students

A. Admissions

Purpose: To provide an effective and efficient system for recruiting and admitting and retraining students to a technical college.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
VIII.	A.1. Design admissions system that will accommodate an open-entry, open-exit system.					
	A.2. Determine admissions criteria.					
	A.3. Determine procedures to notify applicants when an opening is available.					
	A.4. Design admissions interview content and procedure.					
	A.5. Determine role and function of admissions staff.					
	A.6. Select staff to be assigned to admissions procedure.					
	A.7. Train staff to implement admissions.					
	A.8. Assign responsibility for implementing student recruiting.					
	A.9. Design advertising strategy for student recruitment.					
	A.10. Determine optimal schedule for recruitment advertising.					
	A.11. Implement recruitment procedures.					

VIII. Recruit and Admit Students

B. Placement in an Occupational Training Program

Purpose: To provide an effective and efficient system for placing students in occupational programs in which they are likely to succeed.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
VIII.	B.1. Use information from preassessment diagnosis (V.B.)					
	B.2. Use information from program assessment Diagnosis (V.C)					
	B.3. Give tests or interest inventories, if necessary.					
	B.4. Refer to Student Support Services, if necessary.					
	B.5. Determine "fit" between student characteristics and program characteristics.					
	B.6. Admit student to occupational program if an opening is available.					
	B.7. Place student on waiting list if no openings are available.					
	B.8. Explore alternative occupational areas if student chooses not to wait for an opening to occur (ODAS).					
	B.9. Arrange to send student notice when an opening is available.					

IX. Certify Student Competence

A. Document Student Competence

Purpose: To provide a system of quality control for documenting that students have acquired skills, knowledge, and attitudes at an employable level.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
IX.	A.1. Develop CBTE certification documents. A.1.a. Design certificate of completion. A.1.b. Design transcript. A.1.c. Design supporting documentation. A.2. Design means to maintain quality control that standards have, in fact, been met. A.3. Determine who must "sign off" that competencies have been achieved. A.4. Develop the means for updating competencies and revising transcripts and other documentation to reflect achievement of competencies.					

X. Student Placement

A. Placement in Jobs

Purpose: To provide an effective and efficient system for placing students in jobs.						
What must be done		How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
X.	A.1. Develop student placement procedures. A.2. Clarify duties of faculty members responsible for placement of students in jobs. A.3. Communicate duties to those responsible for placement of students in jobs. A.4. Design student placement record system. A.5. Inform students of their responsibility to provide placement and follow-up information to the college.					

X. Student Placement

B. Placement in Advanced Training

Purpose: To provide an effective and efficient system for placing students in advanced training.						
What must be done		How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
X.	B.1. Identify opportunities for advanced training in occupational areas for which advanced training is appropriate or necessary. B.2. Keep an up-to-date file of advanced training opportunities. B.3. Make file of advanced training opportunities available to students. B.4. Develop procedures for placing students in advanced training programs. B.5. Assign responsibility for assisting students to obtain placement in advanced training programs. B.6. Develop follow-up procedures to determine student success in advanced training programs.					

XI. Evaluate and Renew CBTE Program

A. Program Implementation

Purpose: To improve the effectiveness and efficiency of CBTE program implementation, based on student and program operation data.						
What must be done		How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
XI.	A.1. Determine which program implementation data to collect: B.1.a. Student, e.g., dropout rate. B.1.b. Faculty. B.1.c. Staff. B.1.d. Parents and community.					
	A.2. Develop questionnaire items.					
	A.3. Produce questionnaires.					
	A.4. Send questionnaires to respondents.					
	A.5. Analyze data.					
	A.6. Identify gaps and trouble spots.					
	A.7. Use results of data analysis to aid in renewal process.					

XI. Evaluate and Renew CBTE Program

B. Student Placement and Follow-up

Purpose: To improve the effectiveness and efficiency of the CBTE programs on the basis of data and feedback from students and their employers.						
	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
XI.	B.1. Determine information requirements for program improvement.					
	B.2. Develop items for student follow-up questionnaire.					
	B.3. Develop system for sending questionnaires to students.					
	B.4. Develop items for employer follow-up questionnaire.					
	B.5. Develop system for sending questionnaires to employers.					
	B.6. Develop system for processing follow-up data.					
	B.7. Determine who should receive follow-up data.					
	B.8. Determine how folow-up data will be used to suggest changes.					

XI. Evaluate and Renew CBTE Program

C. Revisions as Required

Purpose: To examine gaps identified by the evaluation process and take actions to correct them.

	What must be done	How it will be done	Who will do it	How long it will take	When it must be done	What level of quality is required
XI.	C.1. Appoint a renewal committee of faculty, students, staff, and administrators.					
	C.2. Develop a charge for the committee.					
	C.3. Present committee with analysis of follow-up and program implementation data.					
	C.4. Determine gaps in student and program performance.					
	C.5. Determine which gaps are serious enough to require removal.					
	C.6. Present findings to CBTE Dean of Instruction for action.					
	C.7. Develop intervention plans to remove gaps.					
	C.8. Determine resource requirements to remove gaps.					
	C.9. Obtain resources.					
	C.10. Implement plan to remove gaps.					
	C.11. Collect data to determine effectiveness of intervention.					

ATTACHMENT B

A SHORT TERM PLAN OF ACTION

TO

IMPLEMENT "CURRICULUM STANDARDS"

AND THE

"COMPANION DOCUMENTS" OF TEST ITEMS

Background Information

In 1983 the Department of Postsecondary Education issued "Curriculum Performance Standards" and companion "Documents of Criterion-Referenced Test Items" to all presidents and deans of instruction in the twenty-eight technical colleges of Alabama. The purpose of the documents was to facilitate the implementation of competency-based educational programs.

Some assistance has been provided in the use of the documents by personnel in the Postsecondary and Secondary Departments of Education. In general, the materials are not being used extensively. Evidence from a survey of instructional deans and faculty members point to several reasons for not using the materials contained in the two documents, namely, they are:

--Misunderstandings about the place the documents fit into a comprehensive competency based technical education system.

--Belief that the materials in the two documents were developed for secondary vocational programs and do not, therefore, fit the requirements of postsecondary technical programs.

--The faculty members and many of the instructional deans do not fully understand the components and elements of competency-based technical education.

--Lack of professional understanding in the instructional design, development, implementation, evaluation, and revision processes.

--They are awaiting further directions in the use of the materials.

--The belief that the materials are not valid.

--The materials are not comprehensive enough to meet their needs in the instructional areas.

In developing the documents representatives from postsecondary programs served on the adhoc committees and contributed to the overall processes used.

All instructional deans have copies of the document.

Technical college deans express a sincere interest in the utilization of the documents. Given the interest to implement competency-based technical education by the deans, the expressed doubts about the quality of the two documents and the diversity of competency by personnel in implementing CBTE, the following outline of a plan of action is offered for consideraion.

IMMEDIATE PLANS OF ACTION TO INCLUDE	DATE OF COMPLETION	RESULTS
--Identify 3 occupational programs to be involved as demonstration sites of CBTE.	January 23, 1986	Drafting, Industrial Electronics, Auto-Mechanics
--Identify program content.	February 15, 1986	State Approved Curriculum and Standards
--Acquisition of content.	February 17, 1986	Deans and Faculty have the documents
--Convene the teachers and deans to: --verify program content --develop collegiate curriculum including; program and course descriptions with specific student performance standards and criterion-referenced tests. --develop student profile sheets	February 17, 18 March 6, 7, 1986	Shelton State Community College
--Develop a plan to implement the CBTE programs. Namely; select learning experiences, organizational structures-sequence continuity, and integration strategies.	March 10, 1986	See Attachment "B"
--Develop a plan to evaluate the programs being demonstrated, including a competency profile by exit point.	April, 1986	
--Begin implementation of the plans.	1986, Fall Quarter	
--Evaluate on a preliminary basis.	October-November	
--Revise as necessary.		

IMMEDIATE PLANS OF ACTION TO INCLUDE	DATE OF COMPLETION	RESULTS
--Full program evaluation using program review criteria.	May, 1986	
--Generate 4-5 new CBTE programs by: --identifying a lead college and 4 instructors from 4 other colleges. --updating curriculum content and standards --developing a collegiate curriculum, namely, program and course descriptions, credit hours, content and curriculum standards by courses or exit points --develop exit tests --develop a plan to implement the CBTE programs and courses --develop a plan to evaluate the programs implemented by competency profile exit points.	May, 1986 through November, 1986	
--Implement the plans.	January, 1987	
--Evaluate the plans.	March, 1987	
--Revise as necessary.	April, 1987	
--Generate 4-5 new CBTE programs using the same approach.	April-May, 1987	
--Prepare and conduct outcome evaluations of program completers or graduates.	End of each fiscal year	
--Analyze data and use in appropriate ways; such as accountability reports and program improvement efforts.		

Assumptions

If the activities are acceptable, CBTE can be diffused through use of demonstration sites. Technical college educators working with Department of Postsecondary personnel will become advocates to provide leadership services that lead to the acceptance and institutionalization of CBTE throughout the technical colleges of Alabama.

Success of this diffusion technique depends, in great measure, upon the availability of highly skilled persons at the Department of Postsecondary level and at the college level to complete adequate overall or strategic planning for CBTE. See my Planning Competency Based Technical Education Programs for Technical Colleges in Alabama.

It is suggested, therefore, that increased inservice training of personnel at all levels will be required in the areas of planning, material acquisition, implementation, and evaluations.

This technique of diffusion could assure the decision makers at the state level that college deans and faculty will be involved in all aspects of the:

--planning (strategies and short range)
--inservice training
--material acquisition or development
--implementation
--formative evaluations
--student assessments
--outcome evaluations
--revisions and maintenance of the CBTE systems.